



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,880	06/28/2001	James S. Watkins	5793.3067-00	3039

22852 7590 03/09/2006

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

CHANKONG, DOHM

ART UNIT PAPER NUMBER

2152

DATE MAILED: 03/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/892,880

Applicant(s)

WATKINS ET AL.

Examiner

Dohm Chankong

Art Unit

2152

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

- 1> This action is in response to Applicant's remarks filed 12.30.2005. Claims 1-7 and 9-15 are presented for further examination.
- 2> This is a non-final rejection.

Response to Arguments

- 3> Applicant's arguments in regards to the "only file input-output type functions" with respect to the rejection(s) of claim(s) 1 under 35 U.S.C § 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly cited prior art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

- 4> Claims 1-4, 7, 9-13 and 15 are rejected under 35 U.S.C § 103(a) as being unpatentable over 35 U.S.C § 103(a) as being unpatentable over Vahalia et al, U.S Patent No. 6,192,408 ["Vahalia"], in view of Srivastava, U.S Patent No. 6,684,331, in further view of Helms, U.S Patent Publication 2002|0078183.

Art Unit: 2152

5> As to claim 1, Vahalia discloses a data management system that communicates with a client terminal, the system comprising:

a network address to which the client terminal sends a request reflecting a file transfer function with respect to a particular data file identified by the request [column 1 «lines 59-64» | column 8 «lines 42-45»];

a plurality of file server devices [Figure 7 «items 21, 84, 85, 86»], each performing file input-output type functions and capable of performing the file transfer function requested by the client terminal [column 2 «lines 19-33»], and wherein each of the plurality of file server devices has access to a common storage device that stores the particular data file to be transferred in accordance with the client request [Figure 7 «item 23» | column 12 «lines 12-15. | column 12 «line 49» to column 13 «line 8»];

routing the request to the selected server device to perform the requested function, and wherein the selected server device accesses the common storage device to transfer the particular data file identified by the request [column 1 «line 59» to column 2 «line 18»]; and

a data share unit for preventing more than one of the plurality of file server devices from simultaneously accessing the same storage location of the server storage device [column 2 «lines 58-65»].

Vahalia does not explicitly disclose a virtual address or a load balancer, nor does he disclose that the file server devices only perform file input-output type functions.

6> The function disclosed, limiting the file server devices to performing only file input-output type functions, is well known in the art. Limiting network computing device functionality such that they only perform particular functions describes a device that is known in the art as a “thin device”.

For example, Helms discloses that thin servers are servers that only support a particular function such as access to files on a storage device [0003]. The purpose of limiting the functionality is obvious, providing a cost-efficient solution to required functions while excluding those functions that are not necessary. Thus it would have been obvious to one of ordinary skill in the art to modify Vahalia’s data movers with the thin server teaching, providing an optimized server device at a lower cost solution [Helms, 0003].

7> It should be noted that Vahalia discloses load balancing principles but the load balancing is based on transferring ownership responsibility of files from one data mover to another data mover [Figure 21]. The use of a virtual address with a load balancer is well known in art for providing several advantages such as dynamic balancing and a simple implementation for the client [clients only need to know one virtual address to access the file]. Srivastava is directed towards a providing users access to a group of servers. Srivastava discloses:

a virtual address connection and a load balancer, associated with the virtual address connection, for receiving the request and for selecting one of the plurality of server devices to perform the requested function, wherein the load balancer routes the request to the selected server device [column 9 «lines 50-67»].

Thus the combination of Vahalia and Srivastava thus enables a central load balancer, with a virtual IP address (provided by Srivastava) to enable selection of the appropriate data mover, each having access to any file in common storage (Vahalia). Srivastava's virtual IP address and load balancer functionality provides users access to the plurality of data movers with the use of a single virtual IP address and further enabling scalability of Vahalia's file server system. Therefore, it would have been obvious to one of ordinary skill in the art to incorporate Srivastava's load balancer and associated virtual address capabilities into Vahalia's network file system for the advantages discussed. Srivastava's load balancer and virtual IP address also furthers Vahalia's goal of providing "uniform distribution" of the clients access to the files such that the clients can access any file through more than one data mover [column 12 «lines 12-15»].

8> As to claim 2, Vahalia discloses the plurality of file server devices operating in parallel [Figure 7 «item 21» | column 12 «lines »].

9> As to claims 3 and 4, Vahalia does not disclose a virtual address connection or that the load balancer determines the one of the plurality of file server devices that will perform the server function.

10> As previously discussed in claim 1, Srivastava discloses a virtual address connection and also that the plurality of client terminals send their respective requests to the virtual address connection, and wherein the load balancer determines the one of the plurality of file

server devices that will perform the server function requested by each of the plurality of client terminals [column 9 «lines 50-67»]. The use of virtual address is known for representing the plurality of data movers as a single entity for easier access by the user. Therefore, it would have been obvious to one of ordinary skill in the art to combine Srivastava's virtual address connection with Vahalia for the stated advantages.

11> As to claim 7, Vahalia and Srivastava discloses a load balancer determining the file server device that will perform the function based on a current processing load of each server device [Srivastava, column 11 «lines 13-21»].

12> As to claims 9-12 and 15, as they do not teach or further define over the previously claimed limitations, they are rejected for at least the same reasons set forth for claims 1-4 and 7.

13> Claims 5, 6, 13 and 14 are rejected under 35 U.S.C § 103(a) as being unpatentable over Vahalia, Srivastava, and Helms in further view of Bhaskaran et al, U.S Patent No. 6,601,084 [“Bhaskaran”].

14> As to claims 5 and 13, Vahalia and Srivastava disclose load balancing but do not explicitly disclose that the load balancer randomly determines the file server device that will perform the server function.

Art Unit: 2152

15> Bhaskaran discloses that load balancing based on random determination is well known and common in the art [column 2 «lines 30-34»]. As such, the application of random determination in Vahalia and Srivastava's load balancer basically amounts to a design choice and does not provide an inventive step over what is known and ubiquitous in the art. Therefore, it would have been obvious to one of ordinary skill in the art to incorporate random determination for Vahalia and Srivastava's load balancer to increase the functionality of the balancer in a way that is well known and expected in the art.

16> As to claims 6 and 14, Vahalia and Srivastava do not disclose load balancing according to a predetermined rotational order.

17> Similar to the random determination load balancing, the use rotational or sequential selection principles in a load balancer is well known in the art and there application in a load balancer is a design choice and not an inventive or patentable step. Bhaskaran discloses utilizing sequential selection as a load balancing technique [column 2 «lines 30-34»]. It would have been obvious to one of ordinary skill in the art to incorporate sequential selection in Vahalia and Srivastava's network file system to increase the functionality of their load balancer in a way that is common and well known in the art.

18> Claims 1-7, 9-13 and 15 are rejected under 35 U.S.C § 103(a) as being unpatentable over 35 U.S.C § 103(a) as being unpatentable over Wang et al, U.S Patent No. 6,826,613 ["Wang"], in view of Helms, in further view of Harada et al, U.S Patent No. 5,894,555 ["Harada"].

19> As to claim 1, Wang discloses a data management system that communicates with a client terminal, the system comprising:

a virtual address connection to which the client terminal sends a request reflecting a file transfer function with respect to a particular data file identified by the request [column 4 «lines 39-40» | column 5 «lines 51-54»];

a plurality of file server devices [Figure 2A «items 130, 135, 236» | column 3 «lines 43-44»], each performing file input-output type functions and capable of performing the file transfer function requested by the client terminal [column 6 «lines 46-50» : “the cluster devices may be ... first devices which aggregate second devices”];

a load balancer, associated with the virtual address connection, for receiving the request and for selecting one of the plurality of server devices to perform the requested function [column 5 «lines 52-54» | column 20 «lines 7-24» where : Wang’s switch performs initial load balancing operations]

wherein the load balancer routes the request to the selected server device to perform the requested function [Figure 2B].

Wang does not expressly disclose:

that the devices perform only input/output operations;

the server devices connected to a common storage device that stores the particular data file to be transferred in accordance with the client request; or

a data share unit for preventing more than one of the plurality of file server devices from simultaneously accessing the same storage location of the server storage device.

20> Helms discloses that thin servers are servers that only support a particular function such as access to files on a storage device [0003]. The purpose of limiting the functionality is obvious, providing a cost-efficient solution to required functions while excluding those functions that are not necessary. Thus it would have been obvious to one of ordinary skill in the art to implement Wang's devices [Figure 2A «items 130, 135, 236»] as thin servers for the reasons discussed by Helms [0003].

21> Wang discloses that his devices [Figure 2A «items 130, 135, 236»] may be devices that aggregate second devices. Harada discloses server devices connected to a common storage device that stores the particular data file to be transferred in accordance with the client request [Figure 1 «item 2»]; and

a data share unit for preventing more than one of the plurality of file server devices from simultaneously accessing the same storage location of the server storage device [Figure 1 «item 8»].

It would have been obvious to one of ordinary skill in the art to incorporate Harada's common storage device and data share unit into Wang's data managements system. Such an implementation is suggested by Wang [first devices (file server) which aggregate second devices (storage)]. The incorporation of the data share unit prevents file corruption from simultaneous accesses [Harada, column 1 «lines 23-29»].

22> Thus, the combination of Wang, Helms and Harada provide a system with a switch, associated with a virtual address, performing load balancing operations, in connection with server devices [from Wang], the server devices implemented as thin servers performing only input/output operations for cost effectiveness reasons [from Helms], with the server devices connected to a common storage area and regulated by a data share unit that locks files such as to prevent data corruption caused by simultaneous accesses [from Harada].

23> As to claim 2, Wang discloses the plurality of file server devices operating in parallel [Figure 2A].

24> As to claim 3, Wang discloses the request is a data file request and wherein the client terminal sends all requests to the virtual address connection [column 5 «lines 8-11 and 66-67»].

25> As to claim 4, Wang discloses a plurality of client terminals with respective requests to the virtual address connection, and wherein the load balancer determines the one of the plurality of file server devices that will perform the server function requested by each of the plurality of clients [column 5 «lines 51-66» | Figure 10 «items 1010-1012»].

26> As to claims 5-7, Wang discloses randomly determining, using a predetermined rotational order, or using a current processing load to select the file server device [column 5 «lines 56-65» | column 20 «lines 5-24»].

Art Unit: 2152

27> As to claims 9-15, as they do not teach or further define over the previously claimed limitations, they are rejected for at least the same reasons set forth for claims 1-7.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Yousefi'zadeh, U.S Patent No. 6,950,848.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dohm Chankong whose telephone number is 571.272.3942. The examiner can normally be reached on Monday-Thursday [7:00 AM to 5:00 PM].

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on 571.272.3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DC


BUNJOB JAROENCHONWANIT
SUPERVISORY PATENT EXAMINER